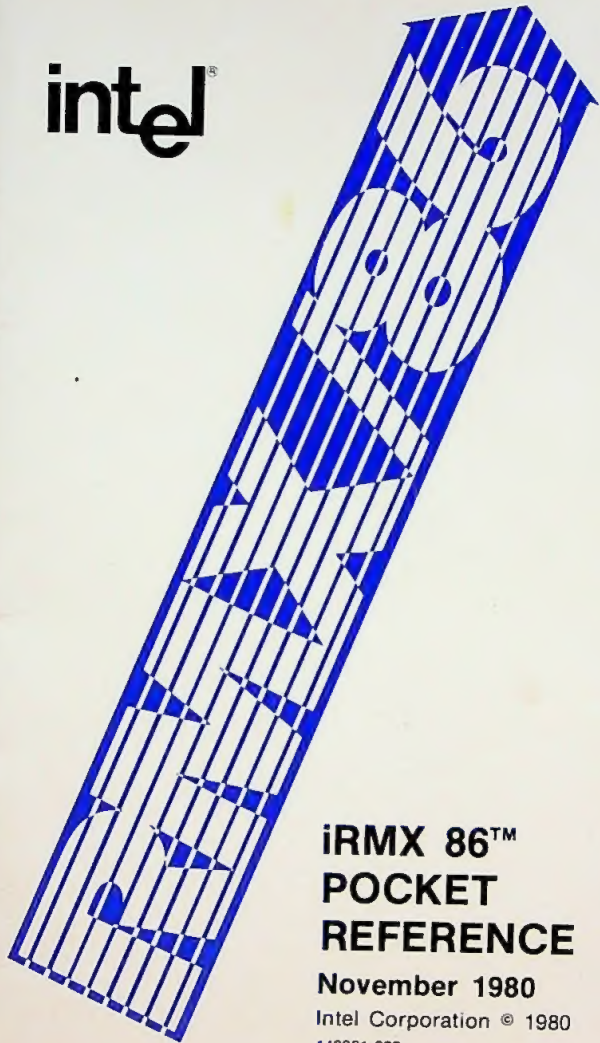


intel[®]



**iRMX 86[™]
POCKET
REFERENCE**

November 1980

Intel Corporation © 1980

142861-002

SUMMARY OF SYSTEM CALLS

Nucleus System Calls As They Apply To Object Types:

Jobs	Tasks	Segments	Mailboxes	Semaphores	Regions	Extensions	Composites
Catalog\$object Uncatalog\$object							
Creates\$- job Deletes\$- job Offspring	Creates\$- task Deletes\$- task Suspend\$task	Creates\$- segment Deletes\$- segment Get\$size	Creates\$- mailbox Deletes\$- mailbox Sends\$- message Receives\$- message	Creates\$- semaphore Deletes\$- semaphore Receives\$- units Sends\$- units	Creates\$- region Deletes\$- region Receives\$- control Sends\$- control Accepts\$- control	Creates\$- extension Deletes\$- extension	Creates\$- composite Deletes\$- composite Inspect\$- composite Alter\$- composite
Get\$pool\$- attributes Set\$pool\$- minimum	Sleep Get\$task\$- tokens Set\$priority Get\$priority						
Jobs	Tasks	Segments	Mailboxes	Semaphores	Regions	Extensions	Composites

Asynchronous I/O System Calls As They Apply To File Types:

File Type

System Call	Stream	Physical	Named Data	Named Directory
Attach\$file
Change\$access
Close
Create\$directory
Create\$file
Delete\$connection
Delete\$file
Get\$connection\$status
Get\$directory\$entry
Get\$extension\$data
Get\$file\$status
Get\$path\$component
Open
Read
Rename\$file
Seek
Set\$extension\$data
Special
Truncate
Write

SYSTEM CALLS

The following abbreviations are used to indicate the data types of parameters in the system calls shown later:

Abbreviation

Meaning

B

Byte

W

Word not containing a token

WT

Word containing a token

DW

Double word

PW

Pointer to a word not containing a token

PWT

Pointer to a word containing a token

PS

Pointer to a string

PD

Pointer to a data structure

PI

Pointer to an instruction

P

Any other kind of pointer

A blue asterisk (*) following the semicolon indicates that a system call is for system programmers only

NUCLEUS CALLS

CALL RQ\$ACCEPT\$CONTROL (region, except\$ptr);
WT PW

ESOK, E\$BUSY, E\$EXIST, E\$NOT\$CONFIGURED, E\$TYPE

CALL RQ\$ALTER\$COMPOSITE (extension, composite,
WT WT

component\$index, replacing\$obj, except\$ptr);
W WT PW

E\$OK, E\$CONTEXT, E\$EXIST, E\$LIMIT, E\$NOT\$CONFIGURED,
E\$PARAM, E\$TYPE

CALL RQ\$CATALOG\$OBJECT (job, object, name, except\$ptr),
WT WT PS PW

E\$OK, E\$CONTEXT, E\$EXIST, E\$NOT\$CONFIGURED, E\$PARAM,
E\$TYPE

composite = RQ\$CREATE\$COMPOSITE (extension, token\$list\$ptr,
WT WT PD

except\$ptr);
PW

token\$list:

STRUCTURE(num\$slots WORD,
num\$used WORD,
tokens(*) WORD);

E\$OK, E\$EXIST, E\$LIMIT, E\$MEM, E\$NOT\$CONFIGURED,
E\$PARAM, E\$TYPE

extension = RQ\$CREATE\$EXTENSION (type\$code,
WT W

deletion\$mailbox, except\$ptr);
WT PW

E\$OK, E\$CONTEXT, E\$EXIST, E\$LIMIT, E\$MEM,
E\$NOT\$CONFIGURED, E\$PARAM, E\$TYPE

job = RQ\$CREATE\$JOB (directory\$size, param\$obj, pool\$min,
WT W WT W

pool\$max, max\$objects, max\$tasks, max\$priority, excpt\$hndlr,
W W W B PD

job\$flags, task\$priority, start\$address, data\$seg, stack\$ptr,
W B PI WT P

stack\$size, task\$flags, except\$ptr);
W W PW

Excpt\$hdlr\$info:

STRUCTURE(EXCEPTION\$HANDLERS\$OFFSET WORD,
EXCEPTION\$HANDLERS\$BASE WORD,
EXCEPTION\$MODE BYTE);

Exception\$Mode	Control to Exception Handler
0	Never
1	On programmer error only
2	On environmental condition only
3	On all exceptional conditions

Job\$flags	Meaning
0	No parameter validation for new job
2	Parameter validation for new job

ESOK, ESCONTEXT, ESEXIST, ESLIMIT, ESMEM, ES\$PARAM

mailbox = RQ\$CREATE\$MAILBOX (mailbox\$flags, except\$ptr);
WT W PW

mailbox\$flags	Queueing Scheme
0	First-in-first-out
1	Priority Based

ESOK, ESLIMIT, ESMEM, E\$NOT\$CONFIGURED

region = RQ\$CREATE\$REGION (region\$flags, except\$ptr);*
WT W PW

Region\$flags	Queueing Scheme
0	First-in-first-out
1	Priority based

ESOK, ESLIMIT, ESMEM, E\$NOT\$CONFIGURED

segment = RQ\$CREATE\$SEGMENT (size, except\$ptr),
WT W PW

ESOK, ESLIMIT, ESMEM, E\$NOT\$CONFIGURED

semaphore = RQ\$CREATE\$SEMAPHORE (initial\$value,
WT W

max\$value, sem\$flags, except\$ptr);
W W PW

sem\$flags

Queueing Scheme

0

First-in-first-out

1

Priority Based

ESOK, ESLIMIT, E\$MEM, E\$PARAM, E\$NOT\$CONFIGURED

task = RQ\$CREATE\$TASK (priority, start\$address, data\$seg,
WT B PI W

stack\$ptr, stack\$size, task\$flags, except\$ptr);
P W W PW

ESOK, ESLIMIT, E\$MEM, E\$NOT\$CONFIGURED, E\$PARAM

CALL RQ\$DELETE\$COMPOSITE (extension, composite,
WT WT

except\$ptr); *
PW

ESOK, E\$CONTEXT, E\$EXIST, E\$MEM, E\$NOT\$CONFIGURED,
E\$TYPE

CALL RQ\$DELETE\$EXTENSION (extension, except\$ptr); *
WT PW

ESOK, E\$EXIST, E\$MEM, E\$NOT\$CONFIGURED, E\$TYPE

CALL RQ\$DELETE\$JOB (job, except\$ptr);
WT PW

ESOK, E\$CONTEXT, E\$EXIST, E\$MEM, E\$NOT\$CONFIGURED,
E\$TYPE

CALL RQ\$DELETE\$MAILBOX (mailbox, except\$ptr);
WT PW

ESOK, E\$EXIST, E\$NOT\$CONFIGURED, E\$TYPE

CALL RQ\$DELETE\$REGION (region, except\$ptr); *
WT PW

ESOK, E\$CONTEXT, E\$EXIST, E\$NOT\$CONFIGURED, E\$TYPE

CALL RQ\$DELETES\$SEGMENT (segment, except\$ptr);
WT PW

E\$OK, E\$EXIST, E\$NOT\$CONFIGURED, E\$TYPE

CALL RQ\$DELETES\$SEMAPHORE (semaphore, except\$ptr);
WT PW

E\$OK, E\$EXIST, E\$NOT\$CONFIGURED, E\$TYPE

CALL RQ\$DELETES\$TASK (task, except\$ptr);
WT PW

E\$OK, E\$CONTEXT, E\$EXIST, E\$NOT\$CONFIGURED, E\$TYPE

CALL RQ\$DISABLE (level, except\$ptr);
W PW

level:	Bits	Value
	15-7	0
	6-4	the interrupt level (0-7)
	3	1
	2-0	0

Note that actual level n equals encoded level n8H.

E\$OK, E\$CONTEXT, E\$NOT\$CONFIGURED, E\$PARAM

CALL RQ\$DISABLE\$DELETION (object, except\$ptr);
WT PW

E\$OK, E\$EXIST, E\$LIMIT, E\$NOT\$CONFIGURED

CALL RQ\$ENABLE (level, except\$ptr);
W PW

level:	Bits	Value
	15-7	0
	6-4	the interrupt level (0-7)
	3	1
	2-0	0

Note that actual level n equals encoded level n8H.

E\$OK, E\$CONTEXT, E\$NOT\$CONFIGURED, E\$PARAM

ESOK, E\$CONTEXT, E\$EXIST, E\$NOT\$CONFIGURED

level:	Bits	Value
	15-7	0
	6-4	The interrupt level (0-7)
	3	1
	2-0	0

ESOK, ECONTEXT, E\$NOT\$CONFIGURED, E\$PARAM

level:	Bits	Value
	15-7	0
	6-4	the interrupt level (0-7)
	3	1
	2-0	0

ESOK. ESPARAM

ESOK, EEXIST, ESMEM, ENOT\$CONFIGURED, E\$TYPE

ExceptionSinfo:

```
STRUCTURE(EXCEPTION$HANDLER$OFFSET  WORD,
          EXCEPTION$HANDLER$BASE     WORD,
          EXCEPTION$MODE              BYTE);
```


Exception\$Mode	Control to Exception Handler
0	Never
1	On programmer error only
2	On environmental condition only
3	On all exceptional conditions

E\$OK, E\$NOT\$CONFIGURED

level = RQ\$GET\$LEVEL (except\$ptr);

W	PW
level:	Bits
	15-8
	7
	6-4
	3-0
	Value/Interpretation
	undefined
	0 some level is being serviced and bits 6-4 are significant
	1 no level is being serviced and bits 6-4 are not significant
	an interrupt level (0-7)
	undefined

E\$OK, E\$NOT\$CONFIGURED

CALL RQ\$GET\$POOL\$ATTRIB (attrib\$ptr, except\$ptr);

PD PW

Attrib:

STRUCTURE(POOL\$MAX	WORD,
POOL\$MIN	WORD,
INITIAL\$SIZE	WORD,
ALLOCATED	WORD,
AVAILABLE	WORD);

E\$OK, E\$NOT\$CONFIGURED

priority = RQ\$GET\$PRIORITY (task, except\$ptr);

B WT PW

E\$OK, E\$EXIST, E\$NOT\$CONFIGURED, E\$TYPE

size = RQ\$GET\$SIZE (segment, except\$ptr);

W WT PW

E\$OK, E\$EXIST, E\$NOT\$CONFIGURED, E\$TYPE

token = RQ\$GET\$TASK\$TOKENS (selection, except\$ptr);
WT B PW

selection	token
0	calling task
1	calling task's job
2	parameter object of calling task's job
3	root job

ESOK, ESPARAM

type\$code = RQ\$GET\$TYPE (object, except\$ptr);
W WT PW

ESOK, E\$EXIST, E\$NOT\$CONFIGURED

CALL RQ\$INSPECT\$COMPOSITE (extension, composite,
WT WT

token\$list\$ptr, except\$ptr);
PD PW

token\$list:
STRUCTURE(num\$slots WORD,
num\$used WORD,
tokens(*) WORD);

ESOK, E\$CONTEXT, E\$EXIST, E\$NOT\$CONFIGURED, E\$TYPE

object = RQ\$LOOKUP\$OBJECT (job, name, time\$limit,
WT WT PS W

except\$ptr);
PW

ESOK, E\$CONTEXT, E\$EXIST, E\$LIMIT, E\$NOT\$CONFIGURED,
ESPARAM, E\$TIME, E\$TYPE

token\$list = RQ\$OFFSPRING (job, except\$ptr);
WT WT PW

ESOK, E\$EXIST, E\$LIMIT, E\$MEM, E\$NOT\$CONFIGURED, E\$TYPE

CALL RQ\$RECEIVE\$CONTROL (region, except\$ptr);
WT PW

ESOK, E\$EXIST, E\$NOT\$CONFIGURED, E\$TYPE

object = RQ\$RECEIVE\$MESSAGE (mailbox, time\$limit,
WT WT W

response\$ptr, except\$ptr);
PWT PW

ESOK, E\$EXIST, E\$NOT\$CONFIGURED, E\$TIME, E\$TYPE

value = RQ\$RECEIVE\$UNITS (semaphore, units, time\$limit,
W WT W W

except\$ptr),
PW

ESOK, E\$EXIST, E\$LIMIT, E\$NOT\$CONFIGURED, E\$TIME, E\$TYPE

CALL RQ\$RESET\$INTERRUPT (level, except\$ptr),
W PW

level:	Bits	Value
	15-7	0
	6-4	the interrupt level (0-7)
	3	1
	2-0	0

Note that actual level n equals encoded level n8H.

ESOK, E\$CONTEXT, E\$NOT\$CONFIGURED, E\$PARAM

CALL RQ\$RESUME\$TASK (task, except\$ptr);
WT PW

ESOK, E\$CONTEXT, E\$EXIST, E\$STATE, E\$TYPE

CALL RQ\$SEND\$CONTROL (except\$ptr);
PW

ESOK, E\$CONTEXT, E\$NOT\$CONFIGURED

CALL RQ\$SEND\$MESSAGE (mailbox, object, response,
WT WT WT

except\$ptr);
PW

ESOK, E\$EXIST, E\$MEM, E\$NOT\$CONFIGURED, E\$TYPE

CALL RQ\$SET\$POOL\$MINIMUM (new\$min, except\$ptr);
W PW

E\$OK, E\$LIMIT, E\$NOT\$CONFIGURED

CALL RQ\$SET\$PRIORITY (task, priority, except\$ptr);*
WT B PW

E\$OK, E\$CONTEXT, E\$EXIST, E\$LIMIT, E\$NOT\$CONFIGURED,
E\$TYPE

CALL RQ\$SIGNAL\$EXCEPTION (exception\$code, param\$num,
W B

stack\$ptr, reserved, reserved, except\$ptr);*
W W W PW

E\$OK, E\$NOT\$CONFIGURED

CALL RQ\$SIGNAL\$INTERRUPT (level, except\$ptr),
W PW

level:	Bits	Value
	15-7	0
	6-4	the interrupt level (0-7)
	3	1
	2-0	0

Note that actual level n equals encoded level n8H.

E\$OK, E\$CONTEXT, E\$NOT\$CONFIGURED, E\$PARAM

CALL RQ\$SLEEP (time\$limit, except\$ptr);
W PW

E\$OK, E\$NOT\$CONFIGURED, E\$PARAM

CALL RQ\$SUSPEND\$TASK (task, except\$ptr);
WT PW

E\$OK, E\$CONTEXT, E\$EXIST, E\$LIMIT, E\$TYPE

CALL RQ\$UNCATALOG\$OBJECT (job, name, except\$ptr);
WT PS PW

E\$OK, E\$CONTEXT, E\$EXIST, E\$NOT\$CONFIGURED, E\$PARAM,
E\$TYPE

CALL RQSWAIT\$INTERRUPT (level, except\$ptr),
W PW

level:	Bits	Value
	15-7	0
	6-4	the interrupt level (0-7)
	3	1
	2-0	0

Note that actual level n equals encoded level n8H.

ESOK, ESCONTEXT, ESNOT\$CONFIGURED, ESPARAM

I/O System Calls

CALL RQ\$ASATTACH\$FILE (user, prefix, subpath, resp\$mbx,
WT WT PS WT
except\$ptr);
PW

Applies to all types of files. Priority of calling task must be in the range 32 to 255.

ESOK, ESBAD\$CALL, ESCONTEXT, E\$EXIST, ESFNEXIST, E\$TYPE,
ESIO, ESLIMIT, ESMEM, E\$NOPREFIX, ESNOT\$CONFIGURED,
ESNOUSER, ESPARAM, E\$TYPE

CALL RQ\$ASCHANGE\$ACCESS (user, prefix, subpath, id, access,
WT WT PS W B
resp\$mbx, except\$ptr);
WT PW

Access.	Bit	Data File Access	Directory File Access
	0	Delete	Delete
	1	Read	Display
	2	Append	Add Entry
	3	Update	Change Entry
	4-7	Reserved	Reserved

Applies only to named data and directory files. Calling task, specifying a non-null path must have a priority in the range 32 to 255 and must either be the owner of the file or have change-entry access to the file's parent directory.

E\$OK, E\$BADSCALL, E\$CONTEXT, E\$EXIST, E\$FACCESS,
E\$FLUSHING, E\$FNEXIST, E\$FTYPE, E\$IFDR, E\$IO, E\$LIMIT,
E\$MEM, E\$NOPREFIX, E\$NOT\$CONFIGURED, E\$NOUSER,
E\$TYPE

CALL RQ\$ASCLOSE (connection, resp\$mbx, except\$ptr),
WT WT PW

Applies to all types of files

E\$OK, E\$BADSCALL, E\$CONTEXT, E\$EXIST, E\$FLUSHING,
E\$LIMIT, E\$MEM, E\$NOT\$CONFIGURED, E\$TYPE

CALL RQ\$ASCREATEDIRECTORY (user, prefix, subpath, access,
WT WT PS B

resp\$mbx, except\$ptr);
WT PW

Access:	Bit	Kind of Access
	0	Delete
	1	Display
	2	Add Entry
	3	Change Entry
	4-7	Reserved

Applies to named directory files only. Calling task must have a priority in the range 32 to 255 and must have add-entry access to the parent of the new directory

E\$OK, E\$BADSCALL, E\$EXIST, E\$FACCESS, E\$FEXIST,
E\$FNEXIST, E\$FTYPE, E\$IFDR, E\$IO, E\$LIMIT, E\$MEM
E\$NOPREFIX, E\$NOT\$CONFIGURED, E\$NOUSER, E\$PARAM
E\$SPACE, E\$TYPE

CALL RQ\$ASCREATE\$FILE (user, prefix, subpath, access,
WT WT PS B

granularity, high\$size, low\$size, must\$create, resp\$mbx,
W W W B W

except\$ptr);
PW

CALL ROSASGET\$CONNECTION\$STATUS (connection
W

resp\$mbx. except\$ptr)
W PW

Result (to resp\$mbx)

STRUCTURE (STATUS	WORD
FILESDRIVER	BYTE
FLAGS	BYTE
OPENS MODE	BYTE
SHARE	BYTE
LOW\$FILES PTR	WORD
HIGH\$FILES PTR	WORD
ACCESS	BYTE

File\$driver	Kind of Files Supported
--------------	-------------------------

1	Physical files
2	Stream files
4	Named files

Open\$mode	Connection Mode
0	Connection is closed
1	Open for reading
2	Open for writing
3	Open for reading and writing

Share	Extent of Sharing
0	Private use only
1	Share with readers only
2	Share with writers only
3	Share with all users

Access	Bit	Data File Access	Directory File Access
	0	Delete	Delete
	1	Read	Display
	2	Append	Add Entry
	3	Update	Change Entry
	4-7	Reserved	Reserved

Applies to all types of files

ESOK E\$BAD\$CALL E\$EXIST E\$FLUSHING E\$LIMIT E\$MEM
E\$NOT\$CONFIGURED E\$TYPE

CALL RQSASGETSDIRECTORYSENTRY (connection entrySnum
WT W

resp\$mbx, except\$ptr):
WT PW

Result (to resp\$mbx)

STRUCTURE (STATUS WORD.
NAME(14) BYTE)

Applies to named directory files only

ESOK, ESBADSCALL, ESDIRSEND EEMPTYSENTRY EEXIST,
ESFACCESS, ESFLUSHING, ESFTYPE, ESIFDR ESIO, ESLIMIT,
ESMEM, ENOTSCONFIGURED, ESTYPE

CALL RQSASGETSEXTENSIONS\$DATA (connection, resp\$mbx,
WT WT

except\$ptr).
PW

Result (to resp\$mbx)

STRUCTURE (STATUS WORD,
COUNT BYTE,
INFO(') BYTE).

ESOK, EEXIST, ESIFDR ESIO ESLIMIT ESMEM,
ESNOTSCONFIGURED, ESTYPE

CALL RQSASGET\$FILESSTATUS (connection, resp\$mbx,
WT WT

except\$ptr).
PW

Result (to resp\$mbx):

STRUCTURE (STATUS WORD
NUMSCONN WORD
NUMSREADER WORD,
NUMSWRITER WORD,
SHARE BYTE,
NAMED\$FILE BYTE,
DEV\$NAME(14) BYTE,
FILES\$DRIVERS WORD,
FUNCTS WORD,
DEV\$GRAN WORD,
LOWSDEV\$SIZE WORD,
HIGHSDEV\$SIZE WORD,
DEV\$CONN WORD);

get 0

Share**Extent of Sharing**

0

Private use only

1

Share with readers only

2

Share with writers only

3

Share with all users

File\$drivers**Bit****Driver No.****Driver**

0

1

Physical file

1

2

Stream file

2

3

Reserved

3

4

Named file

Functs'**Bit****Function**

0

FSREAD

1

FSWRITE

2

FSSEEK

3

FSSPECIAL

4

FSATTACHSDEV

5

FSDETACHSDEV

6

FSOPEN

7

FSCLOSE

8-15

Reserved

Extra result (follows other structure)

STRUCTURE (FDESCSNUM

WORD

FILESTYPE

BYTE.

FILESGRAN

BYTE

OWNER

WORD

LOWSCREATESTIME

WORD.

HIGHSCREATESTIME

WORD

LOWSACCESSSTIME

WORD.

HIGHSACCESSSTIME

WORD

LOW\$MODSTIME

WORD

HIGH\$MODSTIME

WORD

LOW\$FILESSIZE

WORD

HIGH\$FILESSIZE

WORD.

LOW\$FILESBLOCKS

WORD

HIGH\$FILESBLOCKS

WORD

VOL\$NAME(16)

BYTE.

VOL\$GRAN

WORD

LOWSVOLSSIZE	WORD.
HIGHSVOLSSIZE	WORD.
IDSCOUNT	WORD.
FIRST\$ACCESS	BYTE.
FIRST\$ID	WORD
SECONDSACCESS	BYTE.
SECONDSID	WORD.
THIRDSACCESS	BYTE
THIRDSID	WORD).

Applies to all types of files

ESOK, ESBADSCALL, EEXIST, ESFLUSHING, ESLIMIT, ESMEM,
ESNOT\$CONFIGURED, ESTYPE

CALL ROSASGETSPATH\$COMPONENT (connection, resp\$mbx,
WT WT

except\$ptr).
PW

Result (to resp\$mbx)

STRUCTURE (STATUS WORD.
NAME(14) BYTE).

Applies to all types of files

ESOK, ESBADSCALL, EEXIST, ESFLUSHING, ESIO, ESLIMIT,
ESMEM, ESNOT\$CONFIGURED, ESTYPE

CALL ROSASOPEN (connection, mode, share resp\$mbx
WT B B WT

except\$ptr)
PW

Mode	Connection Mode
1	Open for reading
2	Open for writing
3	Open for both reading and writing
Share	Extent of Sharing
0	Private use only
1	Share with readers only
2	Share with writers only
3	Share with all users

Directory files may only be opened for reading and for sharing with all users

ESOK, ESBADSCALL, ESCONTEXT, EEXIST, ESFLUSHING,
ESLIMIT ESMEM ESNOT\$CONFIGURED, ESPARAM
ESSHARE, ESTYPE

CALL RQSAS\$PHYSICAL\$ATTACH\$DEVICE (dev\$Name, file\$Driver
PS B
resp\$mbx except\$ptr),*
WT PW

File\$Driver	Value	File Driver
	1	Physical
	2	Stream
	4	Named

ESOK, ESCONTEXT ESDEVFD, EEXIST ESFNEXIST, ESILLVOL,
ESIO ESLIMIT, ESMEM, ESPARAM, ESTYPE

CALL RQSAS\$PHYSICAL\$DETACH\$DEVICE (connection hard
WT B
resp\$mbx, except\$ptr) *
WT PW

ESOK, ESCONTEXT, EEXIST, ESIO, ESLIMIT, ESMEM,
ESNOT\$CONFIGURED ESTYPE

CALL RQSAS\$READ (connection, buff\$ptr count, resp\$mbx,
WT P W WT
except\$ptr),
PW

Applies to all types of files

ESOK, ESBADSCALL, ESCONTEXT, EEXIST, ESFLUSHING, ESIO,
ESLIMIT, ESMEM, ESNOT\$CONFIGURED, ESTYPE

CALL RQSAS\$RENAME\$FILE (connection, user, prefix subpath
WT WT WT PS
resp\$mbx except\$ptr),
WT PW

Applies only to named data and directory files Calling task must have delete access to the file and add-entry access to the file's new parent directory

ESOK, ESBADSCALL, E\$CONTEXT, E\$EXIST, E\$FACCESS,
 E\$FEXIST, E\$FLUSHING, E\$FNEXIST, E\$FTYPE, E\$IFDR,
 E\$IO, E\$LIMIT, E\$MEM, E\$NOPREFIX, E\$NOT\$CONFIGURED,
 E\$NOUSER, E\$PARAM, E\$TYPE

CALL RQ\$AS\$SEEK (connection, mode, hi\$ptr\$move,
 WT B W

low\$ptr\$move, resp\$mbx, except\$ptr):
 W WT PW

Mode	Action on Pointer
1	Backward by ptr\$move
2	Equal to ptr\$move
3	Forward by ptr\$move
4	To end-of-file minus ptr\$move

Applies only to physical files and named data files.

ESOK, ESBADSCALL, E\$CONTEXT, E\$EXIST, E\$FLUSHING,
 E\$IFDR, E\$IO, E\$LIMIT, E\$MEM, E\$NOT\$CONFIGURED,
 E\$PARAM, E\$TYPE

CALL RQ\$AS\$SET\$EXTENSIONS\$DATA (connection, data\$ptr,
 WT PD

resp\$mbx, except\$ptr):
 WT PW

data:

STRUCTURE (COUNT BYTE,
 INFO(") BYTE):

Applies to asynchronous connections created via the named file driver.

ESOK, E\$EXIST, E\$IO, E\$LIMIT, E\$MEM, E\$NOT\$CONFIGURED,
 E\$PARAM, E\$TYPE

CALL RQ\$AS\$SPECIAL (connection, spec\$func, ioparm\$ptr,
 WT W P

resp\$mbx, except\$ptr):
 WT PW

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Spec\$func.

File Driver	Spec\$func	
for Connection	Value	Function
physical	0	format 204 or 206 track
physical or named	2	notify
stream	0	query
stream	1	satisfy

io\$param (for formatting 204 floppy track).

```
STRUCTURE (TRACK$NUMBER WORD,
           INTERLEAVE WORD,
           TRACK$OFFSET WORD);
```

io\$param (for formatting 206 hard disk track).

```
STRUCTURE (TRACK$NUMBER WORD,
           INTERLEAVE WORD,
           TRACK$OFFSET WORD,
           FILL$CHAR WORD);
```

io\$param (for notify).

```
STRUCTURE (MAILBOX WORD,
           OBJECT WORD);
```

ESOK, E\$BAD\$CALL, E\$CONTEXT, E\$EXIST, E\$FLUSHING,
ESIDDR, E\$IFDR, E\$IO, E\$LIMIT, E\$MEM, E\$NOT\$CONFIGUREI
ESTYPE

```
CALL RQ$ASTRUNCATE (connection, resp$mbx, except$ptr);
                   WT      WT      PW
```

Applies to named data files only

ESOK E\$BAD\$CALL, E\$CONTEXT, E\$EXIST, E\$FACCESS,
E\$FLUSHING E\$IFDR, E\$IO, E\$LIMIT, E\$MEM,
E\$NOT\$CONFIGURED, ESTYPE

```
CALL RQ$ASWRITE (connection, buff$ptr, count, resp$mbx,
                WT      P      W      WT
                except$ptr)
                PW
```

Applies to all types of files except named directory files. The calling task must have append or update access to the file.

ESOK, ESBADSCALL, ESCONTEXT, ESEXIST, ESFACCESS
ESFLUSHING, ESIO, ESLIMIT, ESMEM, ESNOTSCONFIGURED,
ESSPACE, ESTYPE

user = RQSCREATESUSER (ids\$ptr, except\$ptr), *
WT PS PW

ids
STRUCTURE (LENGTH WORD,
COUNT WORD
ID(*) WORD);

ESOK, ESLIMIT, ESMEM, ESNOTSCONFIGURED, ESPARAM

CALL RQSDLETESUSER (user, except\$ptr); *
WT PW

ESOK, ESEXIST, ESNOTSCONFIGURED, ESTYPE

connection = RQSGETSDEFAULTSPREFIX (job, except\$ptr), *
WT WT PW

ESOK, ESBADSCALL, ESEXIST, ESNOPREFIX, ESNOTS-
CONFIGURED, ESTYPE

user\$id = RQSGETSDEFAULTSUSER (job, except\$ptr)
WT WT PW

ESOK, ESBADSCALL, ESEXIST, ESNOTSCONFIGURED, ESNOUSER,
ESTYPE

date\$time = RQSGETSTIME (except\$ptr),
DW PW

ESOK, ESBADSCALL, ESNOTSCONFIGURED

CALL RQSINSPECTSUSER (user, ids\$ptr, except\$ptr), *
WT PS PW

ids
STRUCTURE (LENGTH WORD,
COUNT WORD,
ID(*) WORD);

ESOK, ESEXIST, ESNOTSCONFIGURED, ESPARAM, ESTYPE

USER

CALL RQSET\$DEFAULT\$PREFIX (job. prefix except\$ptr),
WT WT PW

ESOK. E\$BAD\$CALL. E\$EXIST. E\$LIMIT. E\$MEM. E\$NOT\$-
CONFIGURED. E\$TYPE

CALL RQSET\$DEFAULT\$USER (job user. except\$ptr):
WT WT PW

ESOK E\$BAD\$CALL E\$EXIST. E\$LIMIT. E\$MEM. E\$NOT\$-
CONFIGURED. E\$TYPE

CALL RQSET\$TIME (time\$high. time\$low except\$ptr):
W W PW

ESOK. E\$NOT\$CONFIGURED

LOADER CALL

CALL RQ\$AS\$LOAD (connection. resp\$mbx. except\$ptr).
WT WT PW

Result (to resp\$mbx):

STRUCTURE (STATUS	WORD.
RECORD\$COUNT	WORD
ERROR\$REC\$TYPE	BYTE.
NUM\$UNDEF\$REFS	WORD.
INIT\$IP	WORD.
INIT\$CS	WORD.
STACK\$OFFSET	WORD.
INIT\$SS	WORD.
STACK\$SIZE	WORD.
INIT\$DS	WORD);

ESOK. E\$AB\$ADDRESS. E\$BAD\$GRP. E\$BAD\$HDR. E\$BAD\$SEG.
E\$CHECKSUM. E\$CONTEXT. E\$EXIST. E\$NOT\$CONFIGURED.
E\$RECS\$FMT. E\$RECS\$LENGTH. E\$RECS\$TYPE. E\$SEGS\$ALLOC.
E\$TYPE

I/O SYSTEM RESULT SEGMENT

STRUCTURE (STATUS	WORD
UNIT\$STATUS	WORD,
ACTUAL	WORD
ACTUAL\$FILL	WORD,
DEVICE	WORD,
UNIT	BYTE,
FUNC	BYTE,
SPEC\$FUNC	WORD,
LOW\$DEVSLOC	WORD,
HIGH\$DEVSLOC	WORD,
BUFF\$PTR	POINTER,
LOW\$COUNT	WORD,
HIGH\$COUNT	WORD,
AUX\$PTR	POINTER,
LINK\$FOR	POINTER,
LINK\$BACK	POINTER,
RESP\$MBOX	WORD,
DONE	BYTE);

Values in low-order byte of UNIT\$STATUS
(valid only when STATUS = ESIO = 2BH):

Value	Mnemonic	Meaning
0	IOSUNCLASS	Unclassified error
1	IOSOFT	Soft error; retry is possible
2	IOSHARD	Hard error; retry not possible
3	IOSOPRINT	Operator intervention required
4	IOSWRPROT	Write-protected volume

I/O SYSTEM PATH/SUBPATH INFORMATION

Prefix Parameter	Subpath Parameter	Designated Connection
0	Either 0 or pointer to null string	Connection whose token is the default prefix
0	Pointer to ASCII string	ASCII string defines a path from the connection whose token is the default prefix to the target connection
token	Either 0 or pointer to null string	Connection whose token is contained in the prefix parameter
token	Pointer to ASCII string	Prefix parameter contains a token for connection ASCII string defines a path from that connection to the target connection

TERMINAL HANDLER

SPECIAL CHARACTERS AND THEIR EFFECTS

Special Character	Effect
RUBOUT	Deletes previously entered character
Carriage Return	Signals end of line
Line Feed	Signals end of line
ESCAPE	Signals end of line
control-C	Calls the RQSABORTSAP procedure
control-D	Activates the Debugger
control-O	Kills or restarts output
control-Q	Resumes suspended non-Debugger output
control-R	Displays current line with editing
control-S	Suspends non-Debugger output
control-X	Deletes the current line
control-Z	Sends an empty message

REQUEST MESSAGE FORMAT

Offset	Field
0	Function
2	Count
4	Exception Code
6	Actual
8	Message Content

INTERRUPT INFORMATION

ALLOCATION OF INTERRUPT VECTORS

- 0- 55 reserved
- 56- 63 available for external interrupt levels 0-7 respectively
- 64-223 reserved
- 224-255 available for Operating System Extensions
1-32 respectively

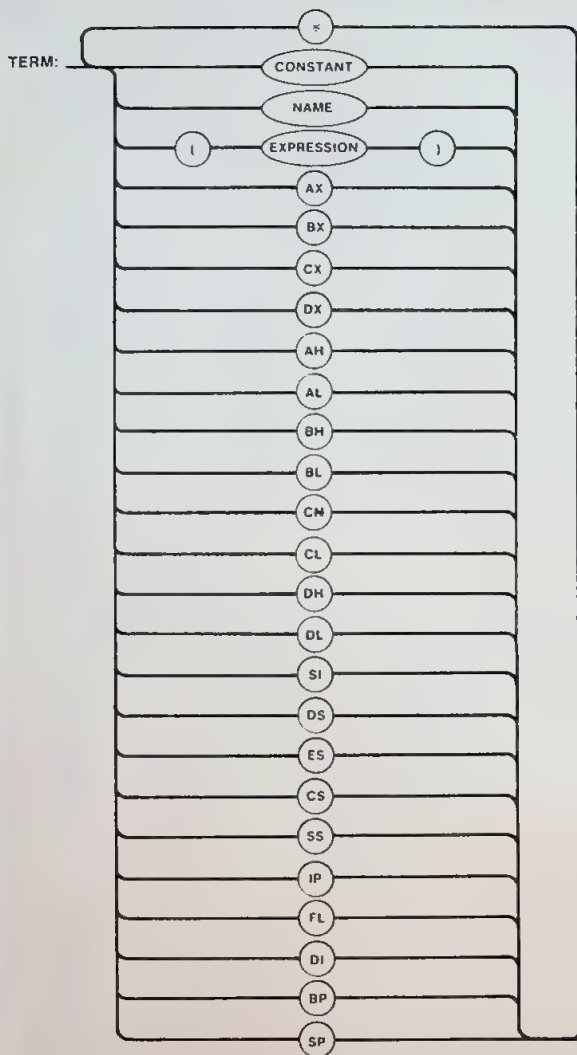
INTERRUPT LEVELS DISABLED FOR RUNNING TASK

Task Priority	Disabled Levels
0-16	0-7
17-32	1-7
33-48	2-7
49-64	3-7
65-80	4-7
81-96	5-7
97-112	6-7
113-128	7
129-255	None

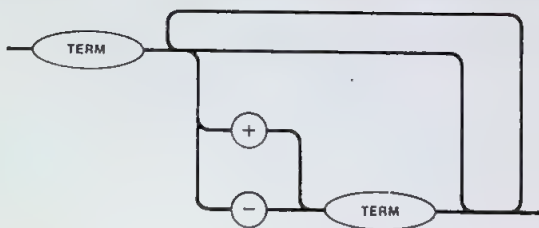
Interrupt Levels Vs. Interrupt Task Priorities

Level	Interrupt Task Priority
0	18
1	34
2	50
3	66
4	82
5	98
6	114
7	130

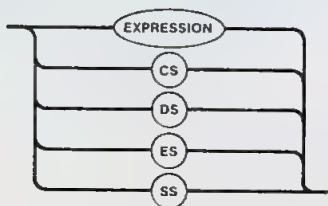
DEBUGGER SYNTAX



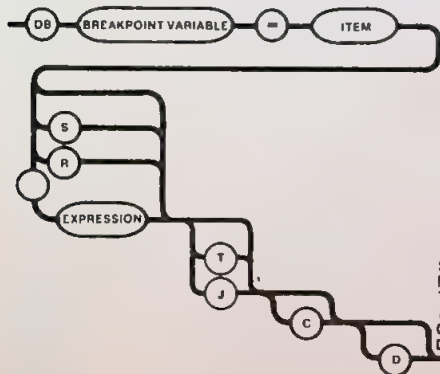
EXPRESSION:



ITEM:

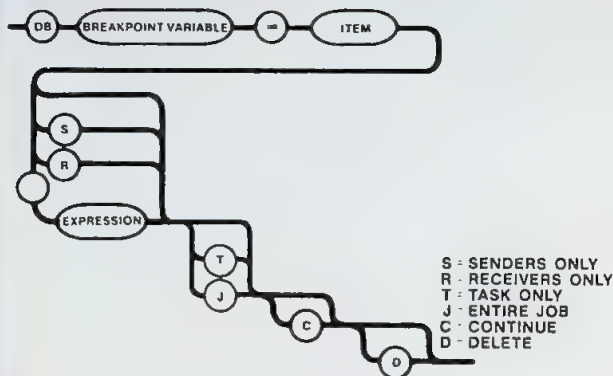


ESTABLISHING A BREAKPOINT:



S SENDERS ONLY
R RECEIVERS ONLY
T TASK ONLY
J ENTIRE JOB
C CONTINUE
D DELETE

CHANGING A BREAKPOINT:



DELETING A BREAKPOINT:



EXAMINING A BREAKPOINT:



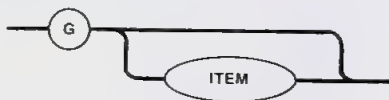
VIEWING THE BREAKPOINT LIST:



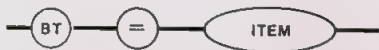
VIEWING THE BREAKPOINT PARAMETERS:



REMOVING A TASK FROM THE BREAKPOINT LIST:



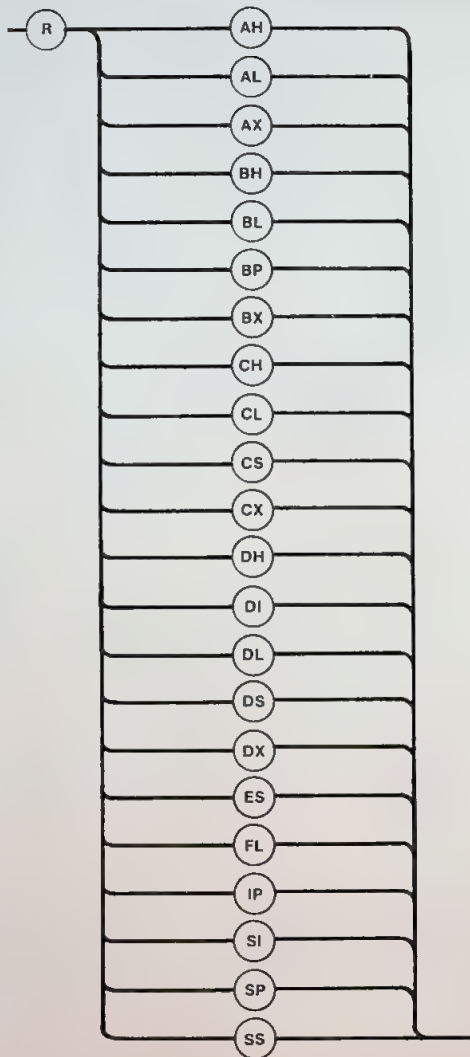
ESTABLISHING THE BREAKPOINT TASK:



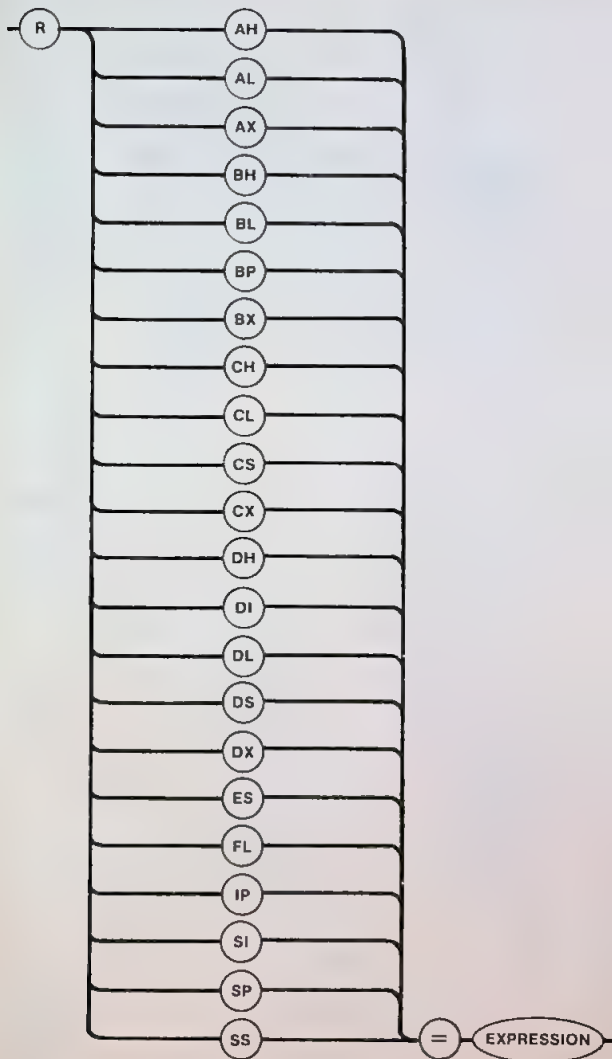
INQUIRING AS TO THE BREAKPOINT TASK:



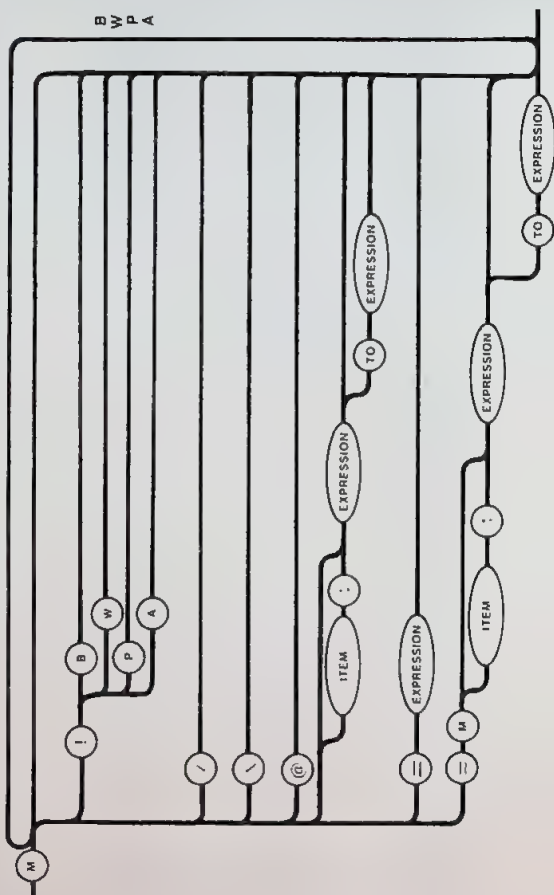
VIEWING THE BREAKPOINT TASK'S REGISTERS:



ALTERING THE BREAKPOINT TASK'S REGISTERS

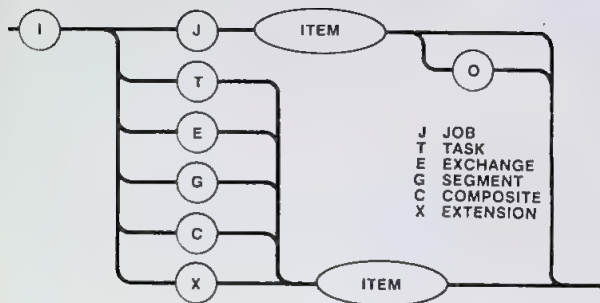


EXAMINING OR MODIFYING MEMORY

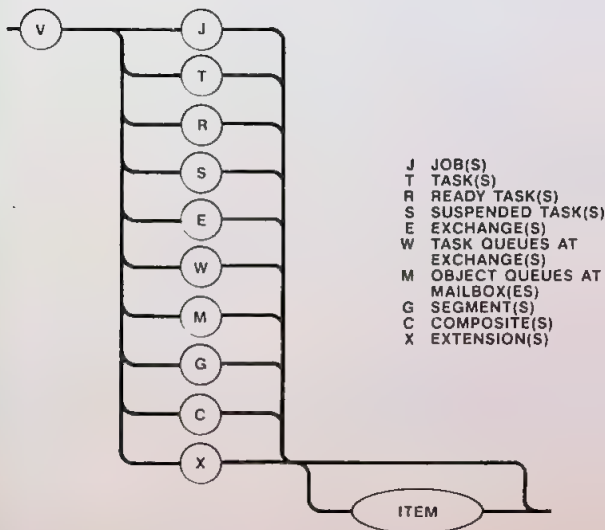


B BYTE
W WORD
P POINTER
A ASCII

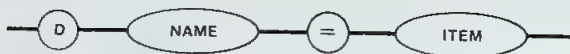
INSPECTING SYSTEM OBJECTS:



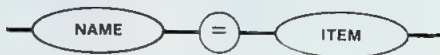
VIEWING SYSTEM LISTS:



DEFINING A NUMERIC VARIABLE:



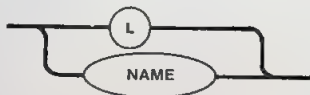
CHANGING A NUMERIC VARIABLE:



DELETING A NUMERIC VARIABLE:



VIEWING NUMERIC VARIABLE(S):



EXITING THE DEBUGGER:



CONDITIONS AND THEIR CODES

Category/ Mnemonic	Meaning	Numeric Code	
		Hex	Decimal
NORMAL			
ESOK	The most recent system call was successful	0H	0
EXCEPTIONAL			
Synchronous (Environmental) Conditions			
ESTIME	A time limit (possibly a limit of zero time) expired without a task's request being satisfied.	1H	1
ESMEM	There is not sufficient memory available to satisfy a task's request.	2H	2
ESLIMIT	A task attempted an operation which, if it had been successful, would have violated a Nucleus-enforced limit	4H	4
ESCONTEXT	A system call was issued out of proper context.	5H	5
ESEXIST	A token parameter has a value which is not the token of an existing object.	6H	6
ESSTATE	A task attempted an operation which would have caused an impossible transition of a task's state	7H	7
ESNOTS-CONFIGURED	The most recently issued system call is not in the present configuration	8H	8

Category/ Mnemonic	Meaning	Numeric Code	
		Hex	Decimal
ESFEXIST	The prefix and subpath arguments specify a file that already exists	20H	32
ESFNEXIST	The prefix and subpath arguments do not specify an existing file	21H	33
ESSUPPORT	The given combination of parameters is not supported	23H	35
ESFACCESS	Access to the file is denied	26H	38
ESSTYPE	The specified file is not of the correct type for this system call	27H	39
ESSPACE	The available space on the specified volume is not sufficient to satisfy the request	29H	41

Synchronous (Programmer Error) Conditions

ESZEROS-DIVIDE	A task attempted to divide by zero	8000H	32768
ESOVERFLOW	An overflow interrupt occurred	8001H	32769
ESTYPE	A token parameter referred to an existing object that is not of the required type	8002H	32770
ESPARAM	A parameter which is neither a token nor an offset has an illegal value	8004H	32772
ESBADSCALL	The I/O System code has been damaged fatally	8005H	32773

ESIFDR	The request is not valid for files supported by the file driver implied in the request	8020H	32800
ESNOUSER	The calling task's job does not have a default user object	8021H	32801
ESNOPREFIX	The calling task's job does not have a default prefix	8022H	32802
Asynchronous (I/O) Conditions			
ESMEM	There is not sufficient memory available to satisfy a task's request	2H	2
ESLIMIT	A task attempted an operation which, if it had been successful, would have violated a Nucleus-enforced limit.	4H	4
ESCONTEXT	A system call was issued out of proper context.	5H	5
ESFEXIST	The prefix and subpath arguments specify a file that already exists	20H	32
ESFNEXIST	The prefix and subpath arguments do not specify an existing file	21H	33
ESDEVFD	The specified device is not compatible with the specified file driver	22H	34
ESSUPPORT	The given combination of parameters is not supported	23H	35
EEMPTYSENTRY	The specified file has been deleted and the I/O System has not reissued the entry to another file	24H	36
ESDIRSEND	A parameter points beyond the end of a directory	25H	37

Category/ Mnemonic	Meaning	Numeric Code	
		Hex	Decimal
ES\$FACCESS	Access to the file is denied.	26H	38
ES\$FTYPE	The specified file is not of the correct type for this system call	27H	39
ES\$SHARE	The request is not compatible with the current sharing status of the specified file	28H	40
ES\$SPACE	The available space on the specified volume is not sufficient to satisfy the request	29H	41
ES\$IDDR	The request is not valid for the device driver implied in the request	2AH	42
ES\$IO	An I/O error occurred during the operation	2BH	43
ES\$FLUSHING	The connection implied in the call was deleted before the operation was completed	2CH	44
Asynchronous (Loader) Conditions			
ES\$BAD\$HDR	The header record in the specified file was invalid	62H	98
ES\$CHECKSUM	A checksum error occurred during loading	64H	100
ES\$EOF	The Loader encountered an end-of-file	65H	101
ES\$FIXUP	The Loader encountered either an invalid fixup record or a fixup mode that cannot be handled	66H	102
ES\$NO\$MEM	There is not sufficient memory available to run the Loader	67H	103

ESRECSFMT	There was an unspecified error in an object record	69H	105
ESRECS- LENGTH	An object record was too long for the Loader's internal buffer	70H	106
ESRECSTYPE	The specified object record type was invalid	71H	107
ESNOSTART	A starting address is not specified in the object module	72H	108

SUBJECT INDEX

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